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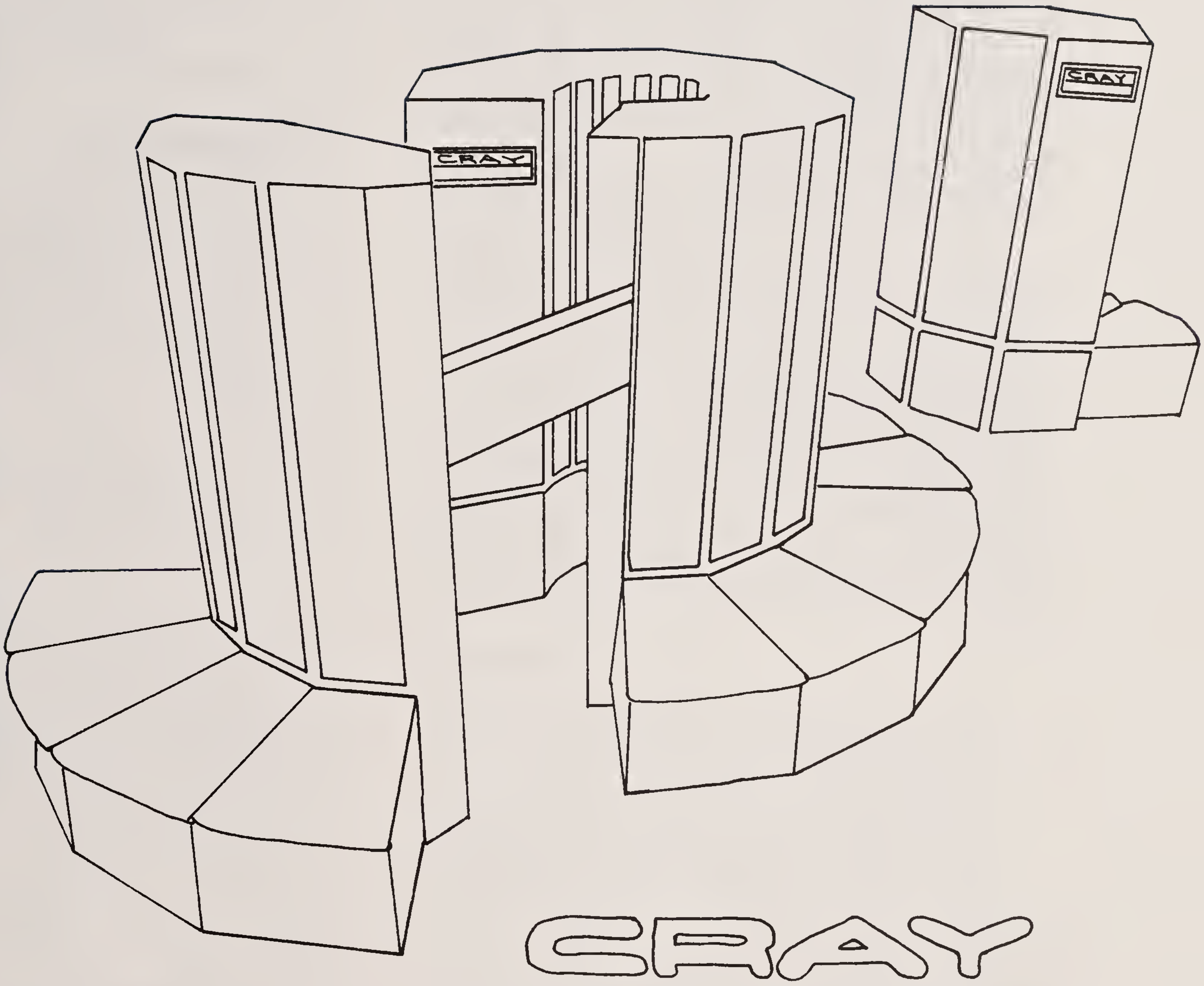
UTCS ComputerNews



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Cover

This month's cover is a line drawing of the Cray X-MP/22 supercomputer that will be delivered to the University of Toronto in late August. For more details, see articles inside this issue.

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Cray Supercomputing Comes to U of T

A Cray X-MP/22 supercomputer will be delivered to the University of Toronto in late August. This system, which will be the most powerful in Canada, is expected to increase the total computing power installed at the University of Toronto by an order of magnitude, thus making it possible to investigate problems previously beyond the capacity of available computers.

An indication of the kind of processing power that can be provided by the X-MP is illustrated by the well known LINPACK benchmark. Results published by Argonne National Laboratory rate the X-MP processor as 45 times faster than a medium-sized IBM 4381. This level of performance should enable researchers with large computational requirements at the University of Toronto and other Ontario universities to compete effectively against the best in the world in their respective fields.

History

When the Cray goes into full production on October 1, it will culminate a three-year effort by many individuals at the University to raise to a world class level the quality of computing facilities available to researchers in Ontario and the rest of Canada. The initiative began when an ad hoc Supercomputer Committee was formed by a group of researchers, including Professors George Luste and Richard Peltier (Physics), Philipp Kronberg (Astronomy), Peter Martin (Canadian Institute for Theoretical Astrophysics), and others.

The original committee was later enlarged to include Professor David Nowlan (Vice-President — Research), UTCS Director Dr. Warren Jackson and Al Heyworth, Coordinator, Computer Networks and Telecommunications. More than a year was then spent analyzing requirements and negotiating with several vendors. At the same time the Ontario Ministry of Colleges and Universities (MCU) was approached about possible Provincial support.

Eventually, on April 3 of this year MCU Minister Gregory Sorbara announced a $10 million Provincial grant to the supercomputer project. These funds will cover approximately half the cost of purchasing, installing, maintaining, and operating the system over a five-year period. At the same time, it was announced that the supercomputer of choice was the X-MP/22, manufactured by Cray Research Incorporated (CRI) of Minneapolis, Minnesota.

The facility will be owned and operated by the University of Toronto, but for five years the Provincial contribution will guarantee for all university researchers in Ontario equal access to half the computing power of the facility. The University will retain control over the remaining half, and about one sixth of that will be sold commercially to recover the project's remaining expenses. The system will be installed in the UTCS Machine Room in McLennan Physical Laboratories and will be operated by UTCS on behalf of the University.

Hardware

The X-MP/22 itself is an impressive piece of hardware. The elegant cylindrical shape, unique to Cray computers, was designed to minimize backplane wiring lengths (and therefore signal-propagation times) while leaving enough room in the chassis for the freon cooling system. The mainframe houses two central processing units (CPUs), and two million 64-bit words (16 Mb) of shared central memory.

The most appropriate measure of the power of a scientific computer is the rate at which floating-point operations can be performed. This corresponds to how rapidly useful results can be obtained from the system. Measurements of this sort are usually expressed in Millions of Floating Point Operations Per Second (MFLOPS). The Cray

continued...

Cray continued

X-MP hardware includes circuits that permit an array of data (a vector) to be processed as a single entity. This permits floating-point additions and floating-point multiplies to occur simultaneously at a rate of one per clock period.[1] Thus, when the vector hardware is in use, the instantaneous result rate can be as high as 210 MFLOPS. When solving a real problem it is unlikely that this peak rate can be maintained for all or even most of the time the program executes. Still, whether a given program is vectorizable (able to utilize vector hardware) or scalar (uses only non-vector instructions), the processing power of the X-MP is awesome.

Central memory consists of 2 Megawords (MW) of ECL static RAM designed to utilize 16-way interleaving to mimimize access times. In addition, each CPU supports concurrent data transfers through its own set of four ports, two reading data into the CPU, another writing data from the CPU, and one more dedicated to input or output. If it becomes worthwhile to do so, central memory can be upgraded in the field to 4 MW.

The system also includes two other Cray-style cabinets, the Input/Output Subsystem (IOS) and the Solid-state Storage Device (SSD). These devices reflect the Cray philosophy of implementing a balanced system, that is, realizing the full potential of powerful CPUs by providing facilities to minimize or eliminate possible I/O or memory bottlenecks.

The IOS offloads input and output processing from the X-MP. The subsystem to be installed at UTCS contains three independent processors and a "buffer memory" of one million 64-bit words. Data is transferred between Cray central memory and the IOS via a 100 Mb/sec channel. The IOS in turn controls four 1200 Mb DD39 disk drives (which can sustain a data transfer rate of 5.9 Mb/sec) and two standard 200 ips 6250 bpi tape drives. In addition, the IOS provides the channel through which users will be able to access the Cray via UTCS' IBM and VAX front end computers.

In effect the SSD provides a 16 million word extension to the X-MP's central memory. Logically, the SSD is an extremely highspeed disk drive with a burst rate for data transfers of 625 Mb/sec and negligible access time. Jobs that produce temporary datasets or perform multiple accesses to large databases can utilize the SSD to drastically reduce the time spent waiting for I/O transfers to finish. By using fewer resources (primarily memory occupancy) the job costs the user less to run, and system throughput is improved. The SSD can be expanded to 32 MW, if necessary; this would have the beneficial side effect of doubling the data transfer rate to 1250 Mb/sec.

Software

Effectively using high-performance hardware requires a wide range of useful and reliable system software. The Cray Operating System (COS) efficiently allocates system resources and controls the execution of user jobs on one or both of the CPUs. (UTCS anticipates running Version 1.15 of COS.) In addition, various system utilities and language translators provide users with the tools to put their programs into execution and obtain correct results.

The workhorse of the software stable has always been CFT, Cray's FORTRAN. This mature ANSII-77 compiler performs optimizations such as automatic vectorization and instruction resequencing in order to utilize the X-MP hardware most effectively. CFT extensions to the FORTRAN language include special directives to control the compiler, and support for such features as stacks, pointers, recursion, and multitasking. Recently, Cray announced the release of CFT77, a compatible alternative to CFT that seems most appropriate for production codes requiring the greatest possible optimization. Also, Cray and a number of third-party software vendors provide extensive collections of optimized

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[1] Each CPU is controlled by a 9.5 nanosecond clock.

Cray continued

FORTRAN and scientific libraries. In general, programs written in other Cray languages (such as Pascal and C) can use routines compiled by CFT or CFT77 as well as routines from the FORTRAN libraries.

A large number of special-purpose software packages are available for Cray systems. These include CNS, IMSL, LINPACK, LISP, MOVIE.BYU, NAg, NASTRAN, PATRAN, PROLOG, SPICE, and many others. It has yet to be decided which software products will be installed on the system, and potential users are invited to express their opinions on the subject.

Access

Typically, users of Cray systems prepare input using other computers (called front ends) from which they submit their jobs to the Cray. Each job consists of at least a job control language (JCL) file. It may also include various other files such as data or program sources. When the user submits the job to COS, the JCL file and possibly other files are transferred through the IOS to the Cray. Later, output files such as the job's log file can be returned to the front end computer and examined by the user.

All user access to the X-MP will be through one of the system's two front ends, an IBM 4381 (running VM/CMS) and a DEC VAX (running VMS). Those who do not have accounts on either of these systems will be able to submit jobs to the Cray through one of the networks to which these systems are connected. The IBM VM/CMS system communicates with other campus IBM systems using RSCS and, via NetNorth, with universities throughout Ontario. The VAX/VMS system is already part of DECnet and TCP/IP campus networks. Either of these can easily be extended to other parts of the province.

This is an exciting time for computer users throughout Ontario. In only a few weeks a truly world class computer will be installed at UTCS. Each issue of *ComputerNews* will contain more information about the Cray X-MP. Watch for it. In the meantime please call me at 978-4085 if you wish to discuss any of the issues related to this project.

Dr. Edmund West
EDWEST@UTGUMBY.UUCP

Supercomputer Users' Group Formed

The pending arrival of the Cray X-MP/22 has led to the creation of the University of Toronto Supercomputer Users' Group (SUG). The chairman of the SUG is Professor P.P. Kronberg, who has been appointed for an interim period of one year. Professor E.V. Swenson is secretary.

Professor Kronberg's recent memo to prospective users of the Cray system contained the following passage which may be of interest to readers of *ComputerNews*.

> The Supercomputer Users' Group has begun to meet and formulate its terms of reference. It currently consists of a multidisciplinary group of ca. 15 researchers who are currently active NSERC-sponsored users of the Dorval Cray, and/or who are purchasing equipment for immediate use with the Cray when it arrives this autumn. It will have an Executive Council of perhaps 15 persons, and a wider membership which will be limited to those who maintain active accounts on the Cray. It is thought that the Executive Council of the Users' Group will consist of the Chairman, Secretary, and Chairpersons of the Working Groups.

continued...

Supercomputer Users' Group Formed continued

> If you are (1) an early prospective user and account holder on the Cray facility and would like to be an active contributing member of the SUG, please contact me (4971) or Dr. Swenson in the Vice-President's office (5138). Alternatively, if you are (2) not an immediate user, but would like to be on a mailing list to be informed of meetings, seminars, and other happenings, please contact us as well.

Anyone with a serious interest in using the Cray should contact Professor Kronberg for additional information.

Dr. Edmund West
EDWEST@UTGUMBY.UUCP

Supercomputer Software Survey

The Supercomputer Users' Group at the University of Toronto (SUG) is investigating the level of demand for software packages that might be made available on the Cray X-MP/22 supercomputer. Dr. J. R. Drummond (Physics) is the coordinator of this effort. Researchers at any Ontario university who have particular requirements or suggestions are urged to contact him at (416)978-4723 as soon as possible.

Dr. Edmund West
EDWEST@UTGUMBY.UUCP

Cray Documentation Available

As the installation date for the Cray X-MP/22 draws closer, interest in Cray documentation is expected to grow. Potential Cray users are invited to examine the manuals recently added to the library in the UTCS Information Office, located in the Engineering Annex, Room 206.

The manuals likely to be of greatest interest to users are:

COS Reference Manual
COS Message Manual
CAL Assembler Reference Manual
FORTRAN (CFT) Reference Manual
CFT77 Reference Manual
Programmer's Library Reference Manual
System Library Reference Manual
Cray C Reference Manual
C Library Reference Manual
Pascal Reference Manual
DEC VAX/VMS Station Reference Manual
IBM VM Station Command and Reference

Information on how to purchase Cray documentation may be obtained by calling the UTCS Information Office at 978-4990.

Dr. Edmund West
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UTCS User Services Move To Koffler Centre

Early in July, part of the UTCS User Interface Group was moved to temporary quarters in the Koffler Student Services Centre. The settlers include:

- Central Advising
- Education Facility
- Imaging/Humanities Support Group
- Languages Support
- Marketing
- Microcomputer Support Group and the Micro Lab
- Statistical and Numerical Analysis Computing Group

The UTCS Publications Group, Information Office, and Library remain in the Engineering Annex.

Our new location is on the third floor, Room 308. The most direct way to get there is by the College Street entrance nearest St. George Street. Just follow the staircase up to the U of T Computer Shop, turn left, and walk through the lounge; Room 308 is on the right. If you need help finding the person you've come to see, please ask the receptionist at the door.

The address is 214 College Street, and the new postal code is M5T 3A1. Happily, all phone numbers used to reach UTCS staff in these support groups are unchanged.

By the time you read this, we should be unpacked and tidied up. Please drop by to see our new home.

Ihor Prociuk
IHOR@UTORONTO

NetNorth Receives Central Funding

UTCS has received funding from the University Central Administration to cover the costs associated with membership in the NetNorth consortium. In the past, UTCS has charged its customers for using NetNorth facilities, either on a pay-as-you-go basis or via an annual subscription fee. These charges were designed to recover NetNorth costs incurred by UTCS.

UTCS is pleased to announce that, due to this new central funding, charging for NetNorth ceased on July 1, 1986. VM/CMS users can send and receive NetNorth messages without the $1.00 charge per thousand records, and the annual subscription fee has been waived for customer machines attached to UTCS' NetNorth gateway machine.

Please note that the regular rate schedule for communication services, such as port and data channel charges, still applies.

Ron Vander Kraats
RVK@UTORONTO

GP UNIX Rate Reduction

UTCS is pleased to announce a reduction in the rates for the GP UNIX service. These lower rates will come into effect on August 1, 1986. Here is the new rate schedule for University clients:

Session Charges

Charging Algorithm	CPU + CTC	
CPU	Charge for use of the central processing unit (CPU)	$0.70/CPU-min (prime time)
CTC	Connect Time Charge	$0.80/hour (prime time)

Prime Time is Monday to Friday from 08:00 to 19:00 hours excluding holidays. **The highest rate applicable during any part of a session will be the rate used to charge for the entire session.** Nonprime time rates are two-thirds of prime time.

Non-session Charges

Online Storage	One block consists of 1024 characters	$0.40/1000 blocks/day
Line Printer	Use of the locally connected line printer	$0.10/page
Typesetting	Use of C.A.T. phototypesetter	$0.25/inch

Please contact your marketing representive to obtain the notes for external and commercial use of the GP UNIX service.

The GP UNIX rate reduction is the first in a series of rate reductions UTCS is planning to introduce for the fall. Special discounts will likely be available for instructional use of some of our systems. Please contact Warren Jackson at 978-8948 for further information on the discounts available for instructional use.

Ron Vander Kraats
RVK@UTORONTO

Grace Period For Overdrawn Accounts

UTCS Accounting Services will be allowing, upon written request, Blanket Purchase Order Accounts (BPOA) and Customer Account Numbers (CAN) to provide full access to services while in an overdrawn state for a period of ten days.

This grace period should allow an account holder sufficient time to fund an overdrawn account before it becomes locked. The account holder continues to be liable for all accrued charges. Account balance warning letters will continue to be sent when the balance reaches 20% of the current allocation. No letter will be sent when an account becomes overdrawn. Denial of service, mainly through the inability to log in to a computing system, will indicate that an account has been in an overdrawn state for longer than ten days.

The grace period will not be provided automatically; it must be requested. To avoid confusion, it is recommended that if one

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Accounting continued

CAN is to have the grace period, the BPOA and all other CANs under that BPOA should also have the privilege. Special needs should, however, be discussed with Accounting Services.

If you would like your BPOA and CANs set up with the grace period, please write to:

UTCS Accounting Services
McLennan Labs, Room 337
University of Toronto

In some situations this grace period may not be of great benefit. If you feel that you need full overdraft, please contact Marg Doherty at 978-8697 to discuss arrangements.

Marg Doherty
DOHERTY@UTORONTO

Microcomputer News

This summer the Microcomputer Support Group is seeing many changes in software, equipment, personnel, and even location.

Software and Hardware

We have recently acquired a **Polaroid Palette** and will soon be offering a slide production service in the Micro Lab. The Palette allows you to take an image from a PC monitor and quickly produce a 35mm slide or colour print. (See next article for details.)

In addition to upgrades of current software, **new software** has been added, including Pagemaker for the Macintosh, MS Windows, Clipper, MS Word 3.0, IMSL libraries, SYSTAT, the WordPerfect Library, EMU-TEK and Omniplot graphics software, and SPSS/PC Tables.

Students will be interested to hear about **Student WordPerfect**, a somewhat stripped-down version of WordPerfect 4.1, now available at the U of T Computer Shop for $99. Student WordPerfect does *not* provide windows, case conversion, index or table of contents generation, multiple columns, mathematical calculations, sorted bibliographical entries, MailMerge, or macros. It *does* include the spelling checker, thesaurus, full printer support, foreign-language support (i.e., Extended ASCII characters), and conversion of text moved to or from other packages. For many students, the available features will be more than adequate, and the price is more realistic for those on a student budget.

We are investigating the possibility of arranging a site license for **ProComm**, a PC communications package currently available as a shareware product on the Bulletin Board System (BBS). ProComm supports the Xmodem and Kermit protocols, among others; it includes dialing directories, menus, script files, and is in general user-friendly. It also supports various terminal emulation modes. For PC users, we plan to support ProComm instead of PC Kermit. ProComm will make it easier for you to communicate with UTCS mainframes, the BBS, and other systems.

In an effort to make transition from Kermit to ProComm as smooth as possible, the VT100 emulation key assignments will be made the same as those of the current Kermit VT52. Several ready-made "scripts" will also be provided in the ProComm distribution. Scripts are ProComm programs that allow you to dial a number automatically, for example, or to log on to a service, upload a file, log off, and hang up the phone, all with two keystrokes. Other scripts provided will do many of the common tasks a communications package might need. You may edit these scripts with any word-processing package capable of modifying or creating ASCII files. The dialing directory will include appropriate entries

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Microcomputer News continued

for all UTCS dial-in services, including the BBS, with the correct parameter settings.

ProComm documentation is available now on the BBS; the UTCS version will be available soon from the BBS and the UTCS Information Office. We think you will like ProComm.

In addition to the software, we have finally been able to purchase some new equipment for the Micro Lab. We now have, or expect to have shortly, a **Macintosh Plus,** a **Commodore Amiga,** and an **Atari 1040ST**, plus increased RAM and storage capacity on our existing machines.

Bulletin Board System

Multiuser access is planned for the **UTCS Micro Bulletin Board System** (BBS). A second hard disk will be added to our AT, which will run UNIX-based BBS software under Xenix. Three input ports will be available, one of them for external users only. Participation by external users should increase the flow of information on the BBS; an annual external membership fee should reduce the number of potential pranksters. The issue of opening up the BBS to people outside the University was discussed on the BBS, and at a recent PC Users Group meeting, where it received general approval.

The BBS will continue to be free to U of T users. Dial-in access is offered at 300, 1200, and, soon, 2400 baud. We are adding the second hard disk since the number of files on the BBS continues to grow, as does the number of machines supported (i.e., operating systems such as Atari ST and Amiga). This BBS is one of a very few Bulletin Boards to offer software for such a large variety of machines.

PCs in the Education Facility

The **UTCS Education Facility** is soon to be outfitted with micros to replace the existing XT-100 terminals. This will enable us to develop and teach micro short courses, workshops, and seminars, covering packages such as SAS/PC, WATFOR-77, WordPerfect, and dBASE III. It also means that there will finally be at least a part-time public micro facility on campus, where a graduate student, faculty member, or researcher can run his or her own software. As in the past, instructors of academic courses/seminars will be able to book the room when it is not in use for UTCS short courses.

Ten PCs will be available, with differing combinations of monitors and display adapters; at least two enhanced colour displays with EGAs will be included. Each machine will also be capable of emulating a VT100 terminal for connecting to UTCS systems through PACX, thus retaining the same function as the XT-100 terminals they are replacing.

New Edition of the Academic's Guide

The *Academic's Guide to Microcomputer Systems* is being revised, with publication expected later this summer. All reviews made available since the first issue will be included, as well as new reviews on products such as TURBO Pascal, WATFOR-77, and the Zenith 241 (AT).

And Lastly

Willard McCarty has left the MSG to join the new Centre for Computing in the Humanities (CCH); we will replace him as soon as possible. Willard's move coincided with the move of most of the User Interface Group, including the MSG, to the **Koffler Centre**. Our physical proximity to SNAC, the Central Advising Office, the Imaging/Humanities Support Group, and applications support staff will surely enhance efficiency in UTCS support of micros.

Paul Roth
PROTH@UTORONTO

Polaroid Palette Available

UTCS now has a Polaroid Palette available in the Micro Lab. With it you can *rapidly* produce colour and black and white slides and prints of any screen image created on an IBM PC Colour Graphics Screen.

This is an inexpensive and quick way to create slides for business presentations, papers, seminars, and briefings. You can capture graphs and data from packages such as Lotus and dBase. Mainframe SAS/GRAPH output can also be turned into slides or prints.

It is simple to use, and the materials are quite inexpensive. You need only create the screen image using whatever software package you already know. Then with a few keystrokes, this image is transferred to instant slides or prints using the Polaroid Palette attached to the machine.

Also available is a software package called 35mm Express. This package allows you to create pictures, graphs, and charts and is designed to work with the Polaroid Palette. It allows you to get more colours on a slide than are normally available with the Colour Graphics Adapter!

For more information about using the Polaroid Palette to liven up your next presentation, contact the UTCS Micro Lab at 978-8701.

Terry Jones
TJ@UTORONTO

SAS and SAS/STAT for Microcomputers

Last year UTCS acquired a site license for a microcomputer version of the SAS statistical analysis and data management software. We are distributing base SAS and SAS/STAT to University employees and students for an annual license fee of $50 and $33 for the diskettes (manuals are extra). This is a remarkable bargain for so powerful a product, particularly in view of the prices of comparable packages. So far the two modules have been installed on 69 microcomputers at U of T, including IBM PCs, XTs, and ATs, Compaq, Zenith, Olivetti, and a few other machines less well known.

For those already using SAS on a mainframe, SAS/PC is even more attractive, because it allows you to connect a SAS/PC session to a mainframe SAS session (provided you have a modem, of course), run some of the programs on the mainframe, and receive the results on your micro. Thus even if you do not have SAS/GRAPH for your PC, you can create data in a SAS/PC session, use it to generate graphs on the mainframe, examine the graphs on the micro, and print them on your micro printer, if you have one. Note, however, that to use your PC as a graphics terminal you must have special software and some kind of graphics card as well. SAS Institute is working on a SAS/GRAPH version for the PC, but it is not expected to be available before mid-1987.

For potential new users, we recommend reading the review of SAS/PC in the new edition of the *Academic's Guide to Microcomputer Systems* (to be published at the end of summer), which describes SAS/PC in some detail. For mainframe users, information on obtaining SAS/PC is in Technote SAS001 on both CMS and MVS. Information on micro-to-mainframe connection is in Technote SAS002.

For more information about SAS/PC, please call Andrzej Pindor at 978-5045.

Dr. Andrzej Pindor
APINDOR@UTORONTO

License Renewal for SAS/PC

A reminder for those who already have SAS/PC: it is time to renew your license for next year. For more information on renewing, see the previous issue of *ComputerNews* (#231), or call Irene Rosiecki at 978-4565.

SAS/GRAPH Enhancements

Release 5 of SAS/GRAPH on CMS and TSO has recently been enhanced to support interactive graphics when you are logging in via the Series/1 (Class 42 or cms for CMS and Class 33 or ibmafs for TSO). You can manipulate your data using SAS, then preview your plots on a graphics terminal or a local plotter attached to your terminal. Your preview device could even be your PC running appropriate graphics terminal emulation software (quite inexpensive). After preview you can send the plots to the Gould (black and white) or Calcomp (4-colour) plotters for final copy.

Version 5 of SAS/GRAPH can be accessed on CMS by typing:

```
getme sas new
```

Since Version 5 requires more memory than previous versions, you may need to use DEFINE STORAGE first (See HELP DEFINE).

Version 5 of SAS/GRAPH can be accessed on TSO by typing:

```
sas newsas graph
```

For your convenience, a graphics screen is available in the UTCS Education Facility (now in the Koffler Centre, Room 308).

For more information about SAS/GRAPH, please contact Advising Services at 978-HELP.

Terry Jones
TJ@UTORONTO

GENSTAT Version 4.04B

Version 4.04B of GENSTAT was installed on the MVS system during May 1986, replacing Version 4.03. GENSTAT is a general statistical package with good data-transformation properties and much flexibility in performing multivariate techniques. GENSTAT is recommended only for users already familiar with statistics and computing.

There are two catalogued procedures available to run GENSTAT. The GENSTAT procedure provides a moderate workspace for 8000 double-precision values. The GENSTATX procedure with a VERSION parameter is required for larger models. VERSION = LARGE provides for 16000 values while VERSION = ENORMOUS gives a workspace accommodating 32000 values.

Two changes may affect current users of GENSTAT. Units 10 and 17 are no longer

continued...

GENSTAT Version 4.04B continued

available for user-defined files. GENSTAT now uses FT10F001 for macros and FT17F001 for an online error message file. Since Version 4.04B requires a larger region than Version 4.03, the default regions for catalogued procedures GENSTAT and GENSTATX have been increased to 500K and 1000K respectively.

GENSTAT has a support level of C. This means that UTCS provides no active support for the product but only makes it available on the system. There is no guarantee that Advising Services will be able to help people having problems with GENSTAT.

Dr. Bill Fehlner
FELNER@UTORONTO

Calcomp Plotter Pens Reordered

UTCS has changed the order of the pens in the Calcomp Plotter. The OLD pens were Black, Blue, Red and Green. This has been changed to Black, Red, Green and Blue. SAS/GRAPH users should not notice any difference in their plots; SAS/GRAPH was changed to reflect the change in the pen order. Users of the FORTRAN Plotbasic Routines that have calls to the subroutine NEWPEN are affected. A simple change to the pen number called by NEWPEN will correct any differences. For more information or assistance with SAS/GRAPH or Plotbasic graphics, contact Advising Services at 978-4357.

Terry Jones
TJ@UTORONTO

Language Processor Upgrade at UTCS

Effective July 8, UTCS performed a major processor upgrade, on both the MVS and CMS systems.

On the MVS system, PL/I Release 5.1 was installed as NEW, and is thus available for user testing. VS FORTRAN 1.4.1, which had been available for user testing for six months, entered the production environment, replacing VS FORTRAN 1.3.1.

Similarly, under CMS, PL/I Release 5.1 was installed as NEW, and VS FORTRAN 1.4.1 became the production compiler. Also under CMS, Waterloo C Version 1.3 was installed as NEW, and WATFOR-77 Version 1.3 became CURRENT, replacing WATFOR-77 1.0E. Pascal 2.2 has been installed as NEW, augmenting the CURRENT Pascal 2.1.

Please address any questions to Advising Services at 978-HELP.

Herb Kugel
HERB@UTORONTO

File Transfer Service Moves to VM/CMS

The UTCS File Transfer Service (FTS), which is used to transfer files between the MVS system and micros, is currently located on a VAX/VMS system. In August, this service will be moved to the VM/CMS system. The UTCS Guide to File Transfer Service has been updated to reflect this change, and a Technote is available to assist current FTS users in switching over.

Since the FTS will be located on a different machine, current FTS users will have to replace their File Transfer Service accounts with new ones. Instructions for doing this will be given in the Technote.

Roni Moravan
RONI@UTORONTO

Hours of Service

Labour Day			
	August 30 (Saturday)	**August 31 (Sunday)**	**September 1 (Monday)**
IBM MVS GPJS(Classes B and E, Calcomp)	10:00-18:00	10:00-18:00	closed
IBM MVS GPJS(Class A, WYLBUR, APL, TSO)	10:00-18:00*	10:00-18:00*	unattended
IBM VM/CMS	10:00-18:00*	10:00-18:00*	unattended
GP UNIX	unattended	unattended	unattended
Normal hours of service for all systems will resume Tuesday September 2, 1986.			

* *Running unattended outside these hours.*

In the event of any changes to the above schedules, a notice will appear in system messages one week prior to the holiday.

Summer hours of service for the University of Toronto will be in effect July 2 through August 29, 1986. UTCS' office hours will be 08:45 to 16:30 during this time.

Personnel Changes

Having been assigned the responsibility of running and maintaining the CRAY X-MP/22 supercomputer under a facility management arrangement, UTCS has augmented its Operations personnel, which in turn has brought about numerous additions and promotions.

Norman Baccari, Dean Bernard, Karl Hinds, Joe Marrelli, and **Edwin Shahnazarian** have joined UTCS as Computer Operator I. Also joining UTCS Operations as a Computer Operator II is **Kal Ahmed,** from Business Information Systems.

Robin Jung, Hung Chu, and **Ron Tyro** have been promoted to Computer Operator II. **James Amos** and **Ludlow Williams** have been promoted to Computer Operator III.

Sam Harrichand has been promoted to Operations Shift Supervisor.

Communications and Technical Support (CTS) has filled a number of vacant positions and welcomes **Michael Konoby** as Professional Engineering Technologist, **Navin Singh** as Engineering Technologist, and **Louise Gauld** as the new Communications Assistant.

The User Interface Group (UIG) also welcomes **Joyce Bernstein,** the new Applications Programmer in the Statistical and Numerical Analysis Group (SNAC); and **Judi Parkinson,** who comes to us from Physical Plant to be the new User Interface Assistant.

Willard McCarty has left the Microcomputer Support Group to join the Centre for Computing in the Humanities (CCH).

UTCS' Waterloo Coop Students this summer are: **Mandy Spiller,** contributing in Publications, and **Alicia Damley,** assisting in Advising Services.

Change Committee

Changes to the IBM Academic MVS Machine Services

1. GENSTAT 4.04B was installed on May 16 to provide the most recent version.
2. The latest version of BMDP was installed June 9 for user test.
3. The order of pens in the Calcomp was changed to match standard SAS/GRAPH on June 9.
4. Changed VS FORTRAN/NEW JCL procedures FORN, FORNGO, FORNLE, and FORNLEGO on June 18 to add linkmode facility.

Changes to IBM Academic VM Machine Services

1. The CHARGES command was enhanced to report spending limits on USERIDs and to report tape charges on May 7.
2. Tapes for users on VM were introduced on May 12.
3. U of T entry replaced UTCS entry in the main HELP menu on May 13.
4. VMBACKUP on VM for the user packs was installed on June 1.
5. PL/I release 5.1 was made available as NEW on July 8.
6. All charges associated with NetNorth subscriptions were dropped on July 1.

Changes to GP UNIX Services

1. The port configuration was reorganized for GP UNIX on April 30 because the highspeed lines were congested on a poor multiplexor.

continued...

Change Committee continued

2. The later version of UUCP was upgraded on GP UNIX on May 22.
3. A new INEWS subsystem program was installed on GP UNIX on May 23.
4. Class C tools were added to the public directory on June 2.
5. Varian printer/plotter service was discontinued on June 2.

Changes to Other Systems and Services

1. The operating system on the SCS VAX was converted from 3.5 to 4.2 on May 25.
2. Version 10 was installed on the Xerox 8700 operating system on May 31.
3. As of July 2, account administrators may specify either a "10-day grace period" or "overdraft mode" on their accounts, thereby permitting users to compute after running out of funds.
4. P2K timeout for GP UNIX lines was implemented on May 28.
5. Automatic speed detection was put on ports connected to the P2K on June 26.

Beverly Scarborough
BEVS@UTORONTO

Recent Acquisitions in the Computer Library

ACM Symposium on Principles of Programming Languages, 13th, St. Petersburg, Fla., 1986. *Proceedings.* New York, ACM, 1986.

Agosti, Maristella. *Database design: a classified and annotated bibliography.* Cambridge, University Press, 1986. 92 p.

Annual review in automatic programming, v12, 1985. *(Proceedings of the 2d. International Symposium on Systems Analysis and Simulation, Berlin, Aug. 1985.)*

Association for Computational Linguistics. *Proceedings of the 24th annual meeting, Columbia University,* New York, June 1986.

Bruno, W. and Bosland, L. *CICU: mastering command level coding using COBOL,* Englewood Cliffs, N.J., Prentice-Hall, 1984. 202 p.

Canadian Conference on Artificial Intelligence, 6th, Montreal, May 1986. *Proceedings.*

Chorafas, Dimitris N. *The handbook of data communications and computer networks.* Princeton, N.J., Petrocelli Books, 1985. 560 p.

Conn, Herbert C., Jr. et al. *Software tools and techniques for embedded distributed processing,* Park Ridge, N.J., Noyes Publications, 1986. 684 p.

Grant C.W. and Butah. *Introduction to the UCSD p-System,* Berkeley, Cal., SYBEX, 1982. 300 p.

Hearn, D. and Baker, M.P. *Computer graphics,* Englewood Cliffs, N.J., Prentice-Hall, 1986. 352 p.

Hofstadter, Douglas R. *Metamagical themas: questing for the essence of mind and pattern.* New York, Basic Books, 1985. 852 p.

McGilton, Henry. *Introducing the UNIX system,* New York, McGraw-Hill, 1983. 556 p.

Merry, Martin, ed. *Expert systems 85: proceedings of the 5th Technical Conference of the British Computer Society Specialist Group on Expert Systems,*University of Warwick, Dec. 1985.Cambridge, University Press, 1985. 334 p.

Railbert, Marc H. *Legged robots that balance.* Cambridge, Mass., MIT Press, 1986. 233 p.

Toussaint, Godfried T., ed. *Computational geometry.*Amsterdam, North-Holland, 1985. 459 p.

continued...

Computer Library continued

Walker, T.C. and Miller, R.K. *Expert systems 1986: an assessment of technology and applications,*Madison, GA., SEAI Technical Publications, 1986. 369 p.

Williamson, S. Gill. *Combinatorics for computer science.*Rockville, Md., Computer Science Press, 1985. 479 p.

Stephanie Johnston

Technical Reports Recently Received in the Computer Library

The University of British Columbia.

Ford, Daniel A. *Semi-automatic-implementation of network protocols.* 92 p. #86-6.

Chan, Christine Wai-chi. *Implementation of microcomputers in elementary schools: a survey and evaluation.* 112 p. #86-7.

Wang, Huay-Yong. *Implementation of team Shoshin: an exercise in porting and multiprocess structuring of the kernel.* 63 p. #86-8.

Cornell University.

Alpern, Bowen L. *Proving temporal properties of concurrent programs: a nontemporal approach.* 116 p. TR 86-732.

Birman, Kenneth P. *ISIS: a system for fault tolerant distributed computing.* 37 p. TR 86-744.

Bitton, Dina. *Performance evaluation of main memory database systems.* 49 p. TR 86-731.

Harmanis, Juris and Hemachandra, Lane. *Complexity classes without machines: on complete languages for UP.* 17 p. TR 86-746.

Knoblock, Todd B. and Constable, Robert L. *Formalized metareasoning in type theory.* 12 p. TR 86-742.

Schneider, Fred B. *Abstractions for fault tolerance in distributed systems.* 7p. TR 86-745.

Srikanth, T.K. *Designing fault-tolerant algorithms for distributed systems using communication primitives.* 102 p. TR 86-745.

University of Newcastle-upon-Tyne.

Campbell, R.H., et al. *STRICT: a design language for strongly typed recursive integrated circuits.* 20 p. #221.

Dobson, J.E. and Randell, B. *Building reliable secure computing systems out of unreliable insecure components.* 14 p. #214.

Hughes, F.L. *The NUNET-UNIX interface protocol description.* 44 p. #212.

Mancini, L. and Koutny, M.*Formal specification of N-modular redundancy.* 14 p. #213.

Montasar-Kohsari, A., et al. *Software monitoring of UNIX systems.* 9 p. #215.

Randell, B. and Dobson, J.E. *Reliability and security issues in distributed computing systems.* 12 p. #210.

Stanford University.

Edighoffer, Judy L. and Lantz, Keith A. *Taliesin: a distributed bulletin board sytem.* 10 p. #1084.

Lantz, Keith A., et al. *Towards a universal directory service.* 18 p. #1086.

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Computer Library continued

Nowicki, William I. *Partitioning of function in a distributed graphics system.* 136 p. #1082.

Rosenschein, Jeffrey S. *Rational interaction: cooperation amoung intelligent agents.* 136 p. #1081.

Russell, Stuart, Esq. *The compleat guide to MRS.* 121 p. #1080.

Theimer, Marvin M. *Preemptable remote execution facilities for the V-system.* 14 p. #1087.

Ullman, Jeffrey D. and Van Gelder, Allen. *Parallel complexity of logical query programs.* 42 p. #1089.

Ban Gelder, Allen. *A message passing framework for logical query evaluation.* 18 p. #1088.

Stephanie Johnston

Documents at UTCS

All vendor-produced documentation may be ordered through the UTCS Information Office, Room 206, Engineering Annex. UTCS documents and selected vendor documents are also stocked there for purchase. Whenever feasible, documents are made available online, and users are encouraged to print their own copies. On the MVS and VM machines, special commands have been provided for this purpose.

To print online documents on:

IBM MVS	**IBM VM/CMS**	**GP UNIX**
WYLBUR users type "do document?"	type "help document"	use *ipr* command
TSO users type "help document"		
APL users type ")LOAD 1 UTCSGUIDE<RETURN>HELP"		

See examples at the end of next page.

UTCS Documents in hardcopy

New:
UTCS Guide to Tape Usage on VM/CMS

Previously announced:
Academic's Guide to Microcomputer Systems
Character Sets for Highspeed Printing
UTCS GUIDE TO PRODUCTS AND SERVICES: Introduction
UTCS GUIDE TO PRODUCTS AND SERVICES: Basics
UTCS GUIDE TO PRODUCTS AND SERVICES: Accounting
UTCS Catalogue: Access, Part 1
UTCS Catalogue: Access, Part 2
UTCS Catalogue: IBM MVS Utilities
UTCS Catalogue: Numerical Products
UTCS Catalogue: Statistics Products
UTCS Catalogue: Text Products
UTCS Guide to Census Tapes
UTCS Guide to File Transfer Service
UTCS Guide to Kermit
UTCS Guide to Text Processing on GP UNIX

UTCS Documents online	**MVS MANUAL**	**CMS LISTING**	**GP UNIX**	**Forms Code**
New:				
Previously announced:				
UTCS GUIDE TO PRODUCTS AND SERVICES: Introduction	INTRO		/usr/doc/utcs/intro	*
UTCS GUIDE TO PRODUCTS AND SERVICES: Basics	BASICS	BASICS	/usr/doc/utcs/basics	*
UTCS Catalogue: Access, Part 1	ACCESS1		/usr/doc/utcs/access1	*
UTCS Catalogue: Access, Part 2	ACCESS2		/usr/doc/utcs/access2	*
UTCS Catalogue: IBM MVS Utilities	MVSUTIL	MVSUTIL		*
Product-Function List	UTILLIST	UTILLIST		BXQD
UTCS Catalogue: Numerical Products	NUMCAT	NUMCAT		*
Product-Function List	NUMLIST	NUMLIST		BXQD
UTCS Catalogue: Statistics Products	STATCAT	STATCAT		*
Product-Function List	STATLIST	STATLIST		BXQD
UTCS Catalogue: Text Products	TEXTCAT	TEXTCAT	/usr/doc/utcs/textcat	*
UTCS Guide to APL	APLGD			*
UTCS Guide to APLXFR	APLXFR			*
UTCS Guide to BMDP	BMDP	BMDP		*
UTCS Guide to Census Tapes	CENSUS	CENSUS	/usr/doc/utcs/census	*
UTCS Guide to File Transfer Service	FTS			*
UTCS Guide to GP UNIX			/usr/doc/utcs/gpunix	*
UTCS Guide to GPJS	GPJSX	GPJSX	/usr/doc/utcs/gpjs	*
UTCS Guide to Highspeed Printing	PRINT	PRINT	/usr/doc/utcs/print	*
UTCS Guide to IBM MVS Online Storage	IBMDISK	IBMDISK		*
UTCS Guide to Kermit	KERMIT	KERMIT	/usr/doc/utcs/kermit	*
UTCS Guide to Micro Laser Printing	MICRLASR	MICRLASR		*
UTCS Guide to SAS	SAS	SAS		*
UTCS Guide to SCRIBE (For printing instructions, see page 1 of document)		SCRIBE	/usr/doc/utcs/scribeguide	*

** Recommended forms code for the 8700 is YXLE unless otherwise stated.*
‡ Use the 87SET command. Type "help 87set".

Documents at UTCS continued

UTCS Documents online	**MVS MANUAL**	**CMS LISTING**	**GP UNIX**	**Forms Code**
UTCS Guide to Series/1 Terminal Use	SERIES	SERIES		*
3270 Emulation:				
Cybernex APL100 and Volker Craig VC404	CYBER	CYBER		*
DM1520	DM1520	DM1520		*
Hardcopy Terminal	HARDCOPY	HARDCOPY		*
IBM 3101	IBM3101	IBM3101		*
IBM PC Kermit	PCKERMIT	PCKERMIT		*
SOROC IQ	SOROC	SOROC		*
VT52	VT52	VT52		*
VT100	VT100	VT100		*
UTCS Guide to SPSS	SPSS	SPSS		*
UTCS Guide to SUBUTILS	SUBUTILS	SUBUTILS		*
UTCS Guide to Tape Usage on VM/CMS		CMSTAPE		*
UTCS Guide to Text Processing on GP UNIX			/usr/doc/utcs/text	*
UTCS Guide to TFW.MAK in SCRIBE		TFWMAK	/usr/doc/utcs/tfwguide	*
UTCS Guide to TSO	TSOGD			*
UTCS Guide to UTDSUTIL	UTDSUTIL	UTDSUTIL		*
UTCS Guide to VM/CMS	CMSGD	CMSGD		*
UTCS Guide to WYLBUR	WYLINTRO			*
UTCS Rate Schedule (Commercial)		RATESCOM		‡
UTCS Rate Schedule (External)		RATESEXT		‡
UTCS Rate Schedule (Internal)		RATESINT		‡
UTCS WYLBUR Tutorial	WYLTUTOR			*
Other Documentation online:				
Kermit				
Kermit Protocol Manual	KERMITPM	KERMITPM		YXOE
Kermit User Guide	KERMITUG	KERMITUG		YXOF
VM Tape Documents				
TapeMap User's Guide and Reference		TAPEMAP		*
VMTAPE Messages and Codes		VMTMSGS		YXOE
VMTAPE User's Guide		VMTUSER		YXOE
Waterloo SCRIPT				
Reference Manual	WSCRPTRF	WSCRPTRF		YXLC
User's Guide	WSCRPTUG	WSCRPTUG		YXLC
GML USER'S Guide	GMLUG	GMLUG		YXLC
OBS WYLBUR				
Messages and Codes	WYLMSGS			YXLD
Qwik Files	WYLQWIK			YXLD
Reference Summary	WYLREFCD			YXLG
Reference Manual	WYLREFMN			YXLD
7.0 Release Guide	WYLREL70			YXLC
User Guide	WYLUSER			YXLD

In these examples, the document to be printed is the UTCS Guide to Census Tapes (MANUAL/LISTING=CENSUS). <RETURN> means RETURN or ENTER key.

TSO: document census forms(yxle) <RETURN>

WYLBUR: do document <RETURN> and respond to the prompts.

CMS: document <RETURN> <RETURN>
laser census listing (forms yxle <RETURN>

GP UNIX: nohup ipr -8p -fyxle /usr/doc/utcs/census & <RETURN>

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* *Recommended forms code for the 8700 is YXLE unless otherwise stated.*
‡ *Use the 87set command. Type "help 87set".*

Consulting and Enquiries

Applications Support & Advising Supervisor	Alex Nishri	KC308	978-7109
External Marketing Consultant	Ihor Prociuk	KC308	978-6875
Erindale College	Joe Lim	ER2035	828-5311
Scarborough College	William Barek	SC626	284-3173
Information Office	Dale Wright	EA206	978-4990
Account & Access Code Enquiries (U of T)	Agatha Stevens	MP337	978-8703
Account & Access Code Enquiries (External)	Sylvia May	MP337	978-7148
IBM PC Maintenance	Kam Mark	SF4306	978-5050
Tape Library (Academic Services)	Rosa Ciddio	MP368	978-7319
Tape Library (Administrative Services)	Miranda Fong	MP368	978-6693
Terminal Rentals	Louise Gauld	SF4306	978-3787
U of T Computer Library	Stephanie Johnston	EA206	978-2987
UTCS Noncredit Short Courses	Irene Rosiecki	EA207	978-4565

Consulting & Advising Services	
Phone:	978-HELP
CMS, TSO and GP UNIX userids:	ADVISOR
CMS Userid for mail problems:	POSTMSTR
Microcomputer Advising(MSG)	978-8701
Numerical/Statistical Advising(SNAC)	978-STAT
System Status Enquiries (GP UNIX)	978-4318
System Status Enquiries (IBM)	978-7393

300 Baud Interactive Services	978-6200
1200 Baud Interactive Services	978-3959
Datapac	4320 0056
Telnet	0302043200056
Tymnet	<backspace> DPAC;302043200056

UTCS Directory

Director	Dr. Warren Jackson	MP350	978-8948	WCJ at UTORONTO *
Associate Director	Eugene Siciunas	MP350	978-5058	EUGENE at UTORONTO *
Managers:				
Communications & Technical Support	Norman Housley	SF4306	978-4967	NORMAN at UTORONTO *
Internal Systems & Administration	Ron Vander Kraats	MP350	978-4428	RVK at UTORONTO *
Operations	Dr. Bob Chambers	MP350	978-7092	
Systems	Bill Lauriston	MP331	978-3579	BILL at UTORONTO *
User Interface	Don Gibson	KC308	978-7331	DON at UTORONTO *

Committees on Computing

UTCS Board	Chairman	Prof. D.M. Nowlan	978-4984	NOWLAN at UTORONTO *

ER = Erindale
KC = Koffler Centre
SF = Sandford Fleming
SC = Scarborough
MP = McLennan Physical Labs

* NetNorth/BITNET/EARN

UTCS Terminal and Advising Sites

Names and Locations

- **Central Advising Office (CAO), 978-HELP**
- **Education Facility (Educ),** Koffler Centre, 214 College St., Room 308.
- **Engineering Annex (EA, CDF),**11 King's College Road, Rooms 103, 104, 107, 107B, 201, 203.
- **Erindale College (Erin), 828-5339,** Mississauga Road, Erindale Campus, Rooms 2005, 2039, 2045
- **Robarts,** Robarts Library, 130 St. George St., Room 1061A
- **Scarborough College (Scar), 284-3122,** Military Trail, Scarborough Campus, Rooms S624, S625, S627, S628, S628A
- **Sidney Smith (Sidney),** 100 St. George St., Rooms 1071, 1073, 2105
- **St.Michael's College,** 121 St. Joseph St., Room 107
- **Trinity College,** 6 Hoskins Ave., Room 024
- **Victoria University,** 73 Queens Park Cres., Room 005.

Sites	**Hours of Access**				**Restrictions***	**Advising**
	Mon-Thurs	**Fri**	**Sat**	**Sun**		
CAO	10:00-18:00	10:00-18:00	closed	closed	Research	978-HELP
CDF	24 hrs	24 hrs	24 hrs	24 hrs	Undergrads	No
EA	24 hrs	24 hrs	24 hrs	24 hrs	None	978-HELP for Research
Educ	9:00-18:00	9:00-18:00	closed	closed	Research**	978-HELP
Erin (2039)□	9:00-17:00	9:00-17:00	closed	closed	Research	Rm 2005
(2045)	24 hrs	24 hrs	24 hrs	closed	Undergrads	Rm 2005
Robarts	8:30-23:00	8:30-18:00	9:00-17:00	closed	None	978-HELP for Research
Scar	24hrs°	24hrs°	24hrs°	24hrs°	Research	Rm S626
					Undergrads	Rm S626-A
Sidney	7:00-24:00	7:00-24:00	7:00-24:00	7:00-24:00	None	978-HELP for Research
St.Michael's	closed	closed	closed	closed	None	Arranged by College
Trinity	closed	closed	closed	closed	None	Arranged by College
Victoria	closed	closed	closed	closed	None	Arranged by College

* Research includes graduates, faculty, staff. ** May be unavailable due to UTCS courses. □ key access available.
° printers available some of the time

Advising Hours

CAO	Monday through Friday, 10:00 - 18:00
Scar	Monday through Friday, 09:00 - 16:30, Wednesday and Friday 18:00 - 22:00
Erin	Monday through Friday 09:00 - 16:30

Sites	PACX	Network Terminal Server	CMS Terminals	Printers	DCS/Micros
CDF	Y	N	N	Y	N
EA	N	Y	Y	Y	N
Educ	Y	N	N	N	N
Erin	Y	Y	N	Y	N
Robarts	Y	N	Y	Y	Y
Scar	Y	Y	N	Y	N
Sidney	N	Y	Y	Y	Y
St.Michael's	Y	N	N	Y	Y
Trinity	N	N	N	Y	Y
Victoria	Y	N	N	Y	Y

(Y=yes, N=no)

UTCS Services

The principle mandate of UTCS is to plan, implement, and operate computer facilities and "common-carrier" networks, and to plan and support divisional, departmental or project computer facilities as requested.

UTCS Centrally Owned and Managed

Systems

IBM MVS

- TS0, WYLBUR,APL, Batch
- 4381-R03 processor, 32 megabytes of memory
- MVS operating system

IBM VM/CMS

- General Purpose Timesharing; access to NetNorth, BITNET, and EARN networks
- 4381-P02 processor, 16 megabytes of memory
- CP operating system, VM/SP HPO R3.4
  CMS timesharing system, VM/SP Release 3
  RSCS spooling system, Release 3

GP UNIX
Technical Assistance: 978-8853

- General Purpose Timesharing under a commercial 4.2BSD UNIX license
- VAX-11/750, 5 megabytes of memory
- high-quality phototypesetting
- offers a sophisticated and powerful environment for text processing
- offers a sophisticated programming environment suitable for commercial software development or testing
- full access to USENET, an electronic technical information exchange facility
- offers excellent electronic mail facilities and ability to send or receive mail from most computer networks world wide, such as UUCPNET, ARPANET, NetNorth, BITNET, CSNET, CONNET

Services

Communications & Technical Support
Primary Phones: 978-3787, 978-4967

- Communications Group provides communications systems, terminals, modems, data channels: consulting and installation.
- Field Service Group installs and maintains communications and computer systems, particularly IBM PCs and Micro Vaxes, on a contract basis or on a cost-per-call basis.
- provides consulting on computer systems technology and installs computer systems
- provides access between the IBM systems and machines using UNIX, VMS and other operating systems. Ethernet and Pronet technologies are used over various transmission media including optical fibre. More basic communications techniques are also used for moderate speed links.
- provides access to NetNorth (BITNET), the North American Universities Network; and USENET, the UNIX networking fraternity
- will provide a communications solution to department needs on a contractual basis.

User Interface Group
Primary Phone: 978-HELP

- provides advising, consulting and documentation on:
  - command languages including CMS, TS0, WYLBUR, JCL and UNIX
  - high level languages including FORTRAN, APL and PL/1
  - packages and libraries including SAS, SPSS-X, BMDP, IMSL and NAg
  - editors and formatters including XEDIT, TS0, WYLBUR, ed, SCRIBE, nroff/troff
- installs and maintains application packages
- provides courses on the more popular services
- provides general micro support
  - selection consulting for hardware and software
  - Micro Lab for evaluation of hardware and software
  - advice on University discounts
  - media conversion and data transfer
  - operates UTCS Microcomputer Bulletin Board System
  - offers Micro Laser Printing Service

Facilities Managed by UTCS

Administrative Computing

- administrative IMS/VS, DB/DC, DB2, Batch and TS0
- 4381-R03 processor, 32 megabytes of memory
- MVS operating system

UNIX SAS (Statistical Analysis Services)

- UNIX Statistical Analysis Service (Dept. of Statistics only)
- PDP-11/70, 4 megabytes of memory
- UNIX Seventh Edition

Computer Disciplines Facility/VAX

VAX-11/780, 4 megabytes of memory
VAX-11/750, 4 megabytes of memory
VAX-11/750, 4 megabytes of memory

- Computer Science interactive access
- UNIX (Berkeley UNIX 4.2BSD)

Computer Disciplines Facility/PC

- 97 TI Professional Computers connected in a Local Area Network
- introductory Computer Science instruction
- MS-DOS with Turing environment

Scarborough College Systems

VAX-11/750, 5 megabytes of memory
VAX-11/750, 5 megabytes of memory

- instructional access using UNIX (Berkeley UNIX 4.2BSD)

Erindale College Systems

VAX 8200, 8 megabytes of memory

- instructional access using VMS
- research access

VAX-11/750, 5 megabytes of memory

- instructional access using UNIX (Berkeley UNIX 4.2BSD)

Institutional Relations System

VAX-11/750, 6 megabytes of memory

- database services to the owner departments using VMS

EPAS Facility

- 4361-5 processor, 12 megabytes of memory
- general VM/CMS services to the owner departments

Software List

Each programming language or package available at UTCS has a support level. In general, Class A Products receive full support, Class B limited support (as time and resources allow), Class C no active support. For complete details of UTCS product support policy, see the UTCS GUIDE TO PRODUCTS AND SERVICES:Introduction.

MVS SOFTWARE

MVS Package/ Compiler	Support Level	Version
Graphics Packages		
PLOTBASIC (FORTRAN)	A	
PLOTBASIC EXTENDED ROUTINES	A	
SAS/GRAPH	A	82.4; 5.08
SURFACE II	C	
ISPF/PDF	A	1
WYLBUR	A	7.0
Languages		
APL (Sharp)	A	May 83
ALGOLW (Stanford)	C	n/a
ASSEMBLER(F)	C	2.1
A.A.E.C. PASCAL	C	2.0
FORTRAN H EXT.	B	2.2.1
LISP	C	
MARKEXAM	B	
PL/C	C	
PL/1 CHECKOUT COMPILER	B	1.3.0
PL/1 OPT COMPILER	B	1.4.0; 1.5.0
SNOBOL 4	C	3.5
SPITBOL	C	
UTCS FORTRAN UTILITIES	B	
VS COBOL	C	2.4
VS FORTRAN	A	1.3.1; 1.4.1
WATBOL	C	V3L2
WATFIV	B	
WPASCAL	C	(U of Waterloo/ West Valley Joint Community College Version)
Numerical Packages		
DYNAMO	B	4.07
EISPACK	C	4
FORMAC	C	
FUNPACK	C	
GPSS	A	Rel.1, Mod. Level 4
IMSL	A	9.2
LINPACK	C	
MINOS	C	4.0
MINPACK	C	1
MPSX	C	Rel. 1, Mod. Level 6
NAg	A	Mark 11
Statistical Packages		
BMD	C	
BMDP	A	Level 83
GENSTAT	C	4.04B
IMSL	A	9.2
NAg	A	Mark 11
NTSYS	C	Dec. 1982
SAS	A	82.4; 5.08
SPSS	C	9.1
SPSSX	A	2.1
TSP	C	3.5
Text-Processing Packages		
COGS(Concordance Generating System)	B	3.1
KWIC	C	
OCP (Oxford Concordance Program)	B	1.4
Waterloo SCRIPT	B	85.1
Utilities		
DSMAP	A	
FILEBOL	C	
GRIPE	A	
IBM UTILITIES		
IEBGENER	A	
IEBCOPY	A	
IEHMOVE	A	
DFSORT	A	6.0
TAPEPRT	A	
TAPEXRAY	A	
TCOPY	A	
UTCS FORTRAN UTILITIES	B	

VM/CMS SOFTWARE

VM/CMS Package/ Compiler	Support Level	Version
Communications Packages		
FTS	A	
Kermit	A	
MICROLASER	A	
Graphics Packages		
SAS/GRAPH	A	82.3; 5.08
PLOTBASIC(FORTRAN)	C	
Languages		
ASSEMBLER(F)	C	
Concurrent Euclid	C	1.9
FORTUTILS	A	2.0
PL/1 CHECKOUT COMPILER	B	1.3.0
PL/1 OPT COMPILER	B	1.4.0
REXX	A	
SNOBOL 4	C	3.5
TESTFORT	A	2.2
Turing	C	
VS FORTRAN	A	1.3.1, 1.4.1
VS PASCAL	C	2.1; 2.2
Waterloo C	C	1.2
WATFIV	C	V2L0
WATFOR-77	A	1.3
Numerical Packages		
IMSL	A	9.2
Statistical Packages		
BMDP	A	Level 83
IMSL	A	9.2
MINITAB	B	82.1
SAS	A	82.3; 5.08
SPSSX	A	2.1
Text-Processing Packages		
COGS (Concordance Generating System)	B	3.1
SCRIBE	A	4(1400)-1
Waterloo SCRIPT	B	85.1
XEDIT	A	
8700 Pseudotypesetting	A	n/a
MICROLASER	A	
Utilities		
FORTUTILS	A	2.0
TESTFORT	A	2.2
TPRINT	C	

Software List continued

UNIX SOFTWARE

UNIX Package/ Compiler	Support Level	Version
Communications Packages		
kermit	B	4C(058)
macget/macput	C	
xmodem	C	
ftp, rsh, rlogin, telnet, rcp (Access via TCP/IP to most of the networked machines on all three campuses)	B	
rn/Pnews	B	
mail, mh, Mail		
rje	B	
Languages		
CC	B	Release E
cc	A	BSD std.
f77	C	BSD std.
efl	C	BSD std.
ratfor	C	BSD std.
ttc	C	
iconc	C	V5
liszt	C	8.36 Opus 79
pc	C	BSD std.
yacc	C	
awk	C	
adb,dbx	C	BSD std.
Text-Processing Facilities		
ed	A	
vi	C	
jove	C	
spell	C	
diction/explain	C	
eqn	A	
tbl	A	
pic	C	
troff	A	
nroff	A	
scribe	A	4(1400)-1
Utilities		
crypt	A	BSD std.
compress	C	BSD std.
csh	B	BSD std.
diff	A	BSD std.
grep	A	BSD std.
ipr	B	
learn	C	BSD std.
patch	C	
sed	A	BSD std.
sort	A	BSD std.
sh	A	BSD std.
tar	A	BSD std.
uniq	A	BSD std.

MICROCOMPUTER SOFTWARE

The following are microcomputer software packages for which UTCS can provide either support or some information. As with mainframe products, micro packages receive full support (Class A), limited support (Class B), or no active support (Class C). The specific criteria differ from those for mainframe classes and are outlined in the Academic's Guide to Microcomputer Systems.

Package/ Compiler	Support Level	Version
Communications Packages		
Kermit (MS-DOS)	A	2.27d
Kermit (APPLE II)	A	
Kermit (CP/M)	C	
Kermit Macintosh	B	
PC TALK3	B	
PC PLOT III	A	
ProComm	B	
MacTerminal	C	
WYLBUR/PC	C	
Database Managers		
AskSam	C	2.2
DATAEASE	B	
dBASE II (CP/M)	B	
dBASE II (MS-DOS)	C	
dBASE III	A	1.1
dBIIICompiler	B	1.1
FoxBASE	C	2.14u
Notebook II	B	2.03
REFLEX	B	
ViewFinder III	B	
ZyINDEX	B	
Graphics Packages		
DR HALO	C	
Microsoft CHART (Macintosh)	C	
MacPaint	B	
Languages		
BASIC	A	
Microsoft FORTRAN	C	
TURBO Pascal	B	
WATFOR-77	A	
Operating Systems, Utilities		
APPLE Turnover	A	
CP/M	B	
FASTBACK	B	
PC-DOS	A	
Sidekick	B	
SuperKey	C	
TURBO Lighting	C	
XenoDisk	A	1.41
Spreadsheet Packages		
APPLEWORKS	C	
Lotus 1-2-3	B	
Multiplan (Macintosh)	C	
Statistical Packages		
MINITAB	C	
SAS/PC	A	6.01
SPSS/PC +	A	
Word-Processing Packages		
Gutenberg Senior	C	
FinalWord II	A	2.0
MacWrite	C	
Microsoft Word	B	2.0
Nota Bene	B	
T^3	B	
Volkswriter Scientific	C	
WordPerfect	A	4.1
WordStar	B	

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